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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,674	06/24/2003	Susan H. Downey	SC11969TK D01	5340

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,674

Applicant(s)

SUSAN H. DOWNEY

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/24/2003
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0603.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 12-15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by the Applicant's Admitted Prior Art (AAPA) of this application.

In re claim 12, AAPA discloses a method for forming an integrated circuit comprising (Background of the Invention and **FIG. 1** of this application): forming a first interconnect layer (**FIG. 1: 22**) over a substrate (**FIG. 1: 19**), forming a second interconnect layer (**FIG. 1: 21**) over the substrate, depositing a passivation layer (**FIG. 1: 15**) over the second interconnect layer; forming an opening in the passivation layer that exposes a first electrical conductor of the second interconnect layer; forming a wire bond pad (**FIG. 1: 13**) that electrically connects to the first electrical conductor through the opening in the passivation layer; wherein the bond pad extends over the passivation layer and is positioned over a second electrical conductor associated with an underlying interconnect layer selected from a group consisting of the first interconnect layer and the second interconnect layer, wherein the second electrical conductor is not directly

attached to the wire bond pad; and attaching a wire bond to the wire bond pad
(Background of the Invention, pages 1-2 and **FIG. 1**).

In re claim 13, **AAPA** discloses wherein the first interconnect layer includes copper (page 2, lines 11-19).

In re claim 14, **AAPA** discloses wherein the second interconnect layer includes copper (page 2, lines 11-19).

In re claim 15, **AAPA** discloses wherein the passivation layer is further characterized as a final passivation layer (page 2, lines 16-19).

In re claim 18, **AAPA** discloses wherein the second electrical conductor is for routing power supply voltage to electrical circuits on the integrated circuit (pages 1-2 and **FIG. 1**).

2. Claims 20-23 and 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by the Applicant's Admitted Prior Art (AAPA) of this application.

In re claim 20, **AAPA** discloses a method for forming an integrated circuit comprising (Background of the Invention pages 1-2 and **FIG. 1**) attaching a wire bond to a bond pad, wherein the bond pad (**FIG. 1: 13**) electrically connects to a first conductor through an opening in a passivation layer (**FIG. 1: 15**), and wherein a portion of the bond pad extends over the passivation layer.

In re claim 21, **AAPA** discloses wherein the first conductor is further characterized as a portion of an uppermost interconnect layer (**FIG. 1**).

In re claim 22, **AAPA** discloses wherein the wire bond is attached to the portion of the bond pad that extends the passivation layer (pages 1-2).

In re claim 23, AAPA discloses wherein the method of claim 22, further comprising a second electrical conductor underlying the portion of the bond pad that extends over the passivation layer, wherein the second conductor is not directly attached to the bond pad (pages 1-2 and **FIG. 1**).

In re claim 25, AAPA discloses wherein the second electrical conductor is further characterized a conductive region below the uppermost interconnect layer (**FIG. 1: 21**) (pages 1-2 and **FIG. 1**).

In re claim 26, AAPA discloses wherein the second electrical conductor is further characterized as an interconnect layer (pages 1-2 and **FIG. 1**).

3. Claims 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by the Applicant's Admitted Prior Art (AAPA) of this application.

In re claim 27, AAPA discloses a method of forming a semiconductor device comprising (pages 1-2 and **FIG. 1**) forming a wire bond pad (**FIG. 1: 13**) that electrically connects to a first interconnect layer (**FIG. 1: 21**) through an opening in a passivation layer (**FIG. 1: 15**); wherein the bond pad extends over the passivation layer and is positioned over a second electrical conductor associated with an underlying interconnect layer selected from a group consisting of the first interconnect layer and a second interconnect (**FIG. 1: 22**) below the first interconnect layer, wherein the second electrical conductor is not directly attached to the wire bond pad (**FIG. 1**).

In re claim 28, AAPA discloses wherein the first interconnect layer includes copper (page 2, lines 11-19).

In re claim 29, AAPA discloses wherein the second interconnect layer includes copper (page 2, lines 11-19).

In re claim 30, AAPA discloses wherein the passivation layer is further characterized as a final passivation layer (page 2, lines 16-19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 16, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art (AAPA) of this application as applied to claims 12-15 and 18 above, and further in view of Koike (U.S. Pub. 2002/0079552).

In re claim 16, AAPA does not explicitly disclose wherein the wire bond pad includes aluminum.

Koike discloses a method for forming an integrated circuit comprising forming a first interconnect layer (**FIG. 2: 21**) over a substrate (**FIG. 1: 11**), forming a second interconnect layer (**FIG. 1: 37**) over the substrate, depositing a passivation layer (**FIG. 6: 39**) over the second interconnect layer; forming an opening (**FIG. 6: 40**) in the passivation layer that exposes a first electrical conductor of the second interconnect layer; forming a wire bond pad (**FIG. 6: 41**) that electrically connects to the first electrical conductor through the opening in the passivation layer; wherein the bond pad extends over the passivation layer and

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is positioned over a second electrical conductor associated with an underlying interconnect layer selected from a group consisting of the first interconnect layer and the second interconnect layer (pages 2-3, paragraphs [0053]-[0058]) and wherein the wire bond pad includes aluminum.

In re claim 17, Koike discloses wherein the method of claim 16, further comprising forming a barrier layer (**FIG. 6: 38**) over the first electrical connector (**FIG. 6: 37**) before forming the wire bond pad (**FIG. 6: 41**), wherein the barrier layer is positioned between the first electrical connector and the wire bond pad (page 3, paragraph [0058]).

In re claim 19, Koike discloses wherein a third conductor is formed using portions of the second interconnect layer and wherein the third conductor is not directly attached to the wire bond pad and routes a power supply voltage under the wire bond pad (page 3, paragraph [0057]-[0058] and **FIG. 6**). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of AAPA and Koike to enable the wire bond pad which includes aluminum of AAPA be formed and furthermore the process is simplified and the cost is reduced (page 4, paragraph [0076]).

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) of this application as applied to claims 20-23 and 25-26 above, and further in view of Koike (U.S. Pub. 2002/0079552).

In re claim 24, Koike discloses wherein the second electrical conductor (**FIG. 6: 37**) is further characterized as a portion of an uppermost interconnect layer. It would have been obvious to one of ordinary skill in the art of making

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semiconductor devices to combine the teaching of AAPA and Koike to enable the second electrical conductor of AAPA be formed and furthermore the process is simplified and the cost is reduced (page 4, paragraph [0076]).

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) of this application as applied to claims 27-30 above, and further in view of Koike (U.S. Pub. 2002/0079552).

In re claim 31, **Koike** discloses wherein the wire bond pad includes aluminum (pages 2-3, paragraphs [0053]-[0058] and **FIG. 6**). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of AAPA and Koike to enable the wire bond pad which includes aluminum of AAPA be formed and furthermore the process is simplified and the cost is reduced (page 4, paragraph [0076]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

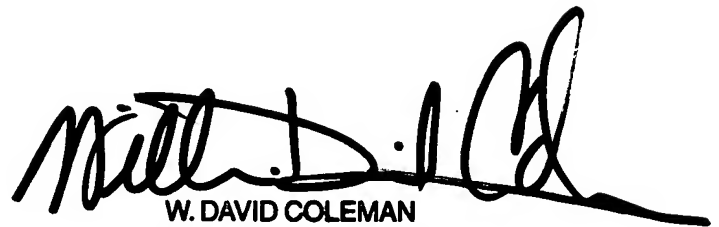
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application
or proceeding should be directed to the receptionist whose telephone number is
(703) 308-0956.

K.N.

February 5, 2004



W. DAVID COLEMAN
PRIMARY EXAMINER